

**WHAT IS CLAIMED IS:**

- 1           1. A method for selecting trees according to a predetermined criterion, comprising the  
2 steps of :
  - 3           a) applying a vibrative member to the tree, the vibrative member being characterized  
4 by mechanical vibration resonance properties;
  - 5           b) vibrating the vibrative member;
  - 6           c) determining the resonance properties of the vibrative member;
  - 7           d) calculating an observed quality factor associated with the vibrative member  
8 vibrations; and,
  - 9           e) comparing the observed quality factor with a predetermined relationship between  
10 the quality factor and the tree selection criterion.
- 1           2. The method of claim 1 wherein the vibrative member has a wood-penetrating end  
2 portion characterized by at least one resonance frequency of mechanical vibration.
- 1           3. The method of claim 2 wherein the step of applying the vibrative member to the  
2 tree comprises embedding the wood-penetrating end portion of the vibrative member into a  
3 trunk portion of the tree.
- 1           4. The method of claim 2 wherein the vibrative member is fabricated from a metal  
2 selected from the group consisting of stainless steel, steel alloys, aluminum and non-ferrous  
3 alloys.
- 1           5. The method of claim 2 wherein the vibrative member is fabricated from a material  
2 selected from the group consisting of ceramic and plastic.

1           6. The method of claim 1 wherein the tree selection criterion is dependent upon the  
2 maturity of the tree.

1           7. The method of claim 2 wherein the resonance properties of the vibrative member  
2 include the at least one resonance frequency of the wood-penetrating end portion and a  
3 resonance bandwidth.

1           8. The method of claim 2 wherein the wood-penetrating end portion includes at least  
2 one prong.

1           9. The method of claim 2 wherein the wood penetrating end portion includes two  
2 prongs.

1           10. The method of claim 9 wherein the two prongs are each characterized by a  
2 different resonance frequency.

1           11. A tree probe comprising:  
2           a) a vibrative member having a wood-penetrating end portion characterized by at least  
3 one resonance frequency of mechanical vibration;  
4           b) means for vibrating the vibrative member at about the resonance frequency of the  
5 wood-penetration end portion; and,  
6           c) means for measuring vibration amplitude across a frequency range sufficient to  
7 determine a characteristic Q value.

1           12. The tree probe of claim 11 wherein the wood penetrating end portion includes at  
2 least one prong.

1           13. The tree probe of claim 11 wherein the wood penetrating end portion includes two  
2 prongs.

1           14. The tree probe of claim 13 wherein the two prongs are each characterized by a  
2 different resonance frequency.

1           15. The tree probe of claim 11 wherein the vibrative member is fabricated from a  
2 metal selected from the group consisting of stainless steel, steel alloys, aluminum and non-  
3 ferrous alloys.

1           16. The method of claim 11 wherein the vibrative member is fabricated from a  
2 material selected from the group consisting of ceramic and plastic.

1           17. The tree probe of claim 15 wherein the vibrative member is a unitary single piece  
2 member.

1           18. The tree probe of claim 16 wherein the vibrative member is a unitary single piece  
2 member.

1           19. The tree probe of claim 11 wherein the means for vibrating the vibrative member  
2 comprises a piezoelectric transducer attached to the vibrative member and means for  
3 supplying the piezoelectric transducer with an alternating current at about the resonance  
4 frequency of the wood penetration end portion of the vibrative member.

1           20. The tree probe of claim 19 wherein the means for supplying an alternating current  
2 includes a tunable sine wave or square wave generator.

1           21. The tree probe of claim 11 wherein the means for measuring vibration amplitude  
2 includes an accelerometer attached to the vibrative member.

1           22. The tree probe of claim 11 wherein the means for vibrating the vibrative member  
2 comprises a piezoelectric transducer attached to the vibrative member and means for  
3 supplying the piezoelectric transducer with an alternating current at about the resonance  
4 frequency of the wood penetration end portion of the vibrative member and wherein the  
5 means for measuring vibration amplitude includes an accelerometer attached to the vibrative  
6 member.